

## Case 3587

### *Podocnemis unifilis* Troschel, 1848 (Reptilia, Testudines): proposed precedence over *Emys cayennensis* Schweigger, 1812

R.C. Vogt

*Coordenação de Pesquisas em Biologia Aquática, Instituto Nacional de Pesquisas da Amazônia, Manaus, Amazonas, Brazil 69083-000*  
(e-mail: vogt@inpa.gov.br)

S.A. Thomson

*Institute for Applied Ecology, University of Canberra, Canberra ACT 2601, Australia* (e-mail: scott.thomson321@gmail.com)

A.G.J. Rhodin

*Chelonian Research Foundation, 168 Goodrich St., Lunenburg, MA 01462 U.S.A.*  
(e-mail: rhodinrcf@aol.com)

P.C.H. Pritchard

*Chelonian Research Institute, 402 South Central Ave., Oviedo, FL 32765 U.S.A.*  
(e-mail: chelonianri@gmail.com)

R.A. Mittermeier

*Conservation International, 2011 Crystal Drive, Suite 500, Arlington, VA 22202 U.S.A.* (e-mail: r.mittermeier@conservation.org)

N. Baggi

*Institute for Applied Ecology, University of Canberra, Canberra ACT 2601, Australia*

**Abstract.** The purpose of this application, under Article 23.9.3 of the Code, is to conserve the specific name *Podocnemis unifilis* Troschel, 1848, for a widely distributed species of Amazonian turtle (family PODOCNEMIDIDAE) of both economic and conservation importance, by giving it precedence over its infrequently used senior synonym *Podocnemis cayennensis* (Schweigger, 1812). This species, the Yellow-spotted River Turtle, has long been referred to as *P. unifilis* by the IUCN Red List and CITES, as well as in at least 200 scientific publications over more than a century, whereas the name *P. cayennensis* has only been applied to this species in very few recent publications. Prior to 1974, the name *cayennensis* had usually been used incorrectly for another species, the Red-headed River Turtle, *Podocnemis erythrocephala* (Spix, 1824), as noted and corrected by Mittermeier & Wilson (1974) and Pritchard & Trebbau (1984). The conservation of the binomen *P. unifilis* will stabilize the use of a name that has been in general use for this species in the vast majority of the scientific publications, government documents, endangered species lists, and the general literature for over 100 years. Giving precedence to the older name (*cayennensis*) would be counter to usage, and would create much confusion in the literature.

**Keywords.** Nomenclature; taxonomy; Reptilia; Testudines; PODOCNEMIDIDAE; *Podocnemis*; *Podocnemis unifilis*; *Podocnemis cayennensis*; Yellow-spotted River Turtle; Amazon; South America.

1. For over a 100 years (e.g. Williams, 1954), the name *Emys cayennensis* Schweigger, 1812 (p. 298)(currently *Podocnemis cayennensis*) was applied incorrectly to what is now known as *Podocnemis erythrocephala* (Spix, 1824, p. 9). Mittermeier & Wilson (1974) suspected, as was later demonstrated by Pritchard & Trebbau (1984) and David (1994), that *Emys cayennensis* actually refers to the species known by most authors as *Podocnemis unifilis* Troschel, 1848 (p. 647). Although *Podocnemis cayennensis* has not been in common use (but see David, 1994; Bonin et al., 1996, 2006; Bour, 2006) and its species identification has at times been confused (reviewed by Pritchard & Trebbau, 1984, and Bour, 2006), it must be recognized that the oldest valid name for this taxon is *Emys cayennensis* Schweigger, 1812, as confirmed by the lectotype designated by Bour (2006).

2. The synonymy for *Podocnemis unifilis* presented below is based on van Dijk et al. (2012), Schneider et al. (2012), Rhodin et al. (2010), and Fritz & Havas (2007), but with some more recent updates:

*Emys cayennensis* Schweigger, 1812, p. 298. Type locality: 'Cayenna' [= Cayenne, French Guiana]. Holotype: not designated, but three syntypes are mentioned. Lectotype designated by Bour (2006): MNHN 8359 (Muséum National d'Histoire Naturelle, Paris; see Pritchard & Trebbau, 1984, and Bour, 2006, for justification); a juvenile dry specimen with head and shell separated; photographed in colour by Bour (2006); collected by L.C.M. Richard between 1781 and 1789 (not examined by authors);

*Testudo Terekay* Humboldt, 1819, p. 243. Type locality: 'Haut-Orénoque, ... l'Apure, l'Uritucu, la Guarico et ... les Llanos de Caracas' (= Upper Orinoco, Apure, Uritucu, Guarico, and llanos of Caracas [Venezuela]). No type specimens known;

*Chelys (Hydraspis) Cayennensis* (Schweigger); Gray, 1830, p. 17;

*Chelys (Hydraspis) Lata* Bell in Gray, 1830, p. 17. Type locality 'Demerara', Guyana; *Hydraspis Cayennensis* (Schweigger); Gray 1831, p. 42;

*Emys terekay* (Humboldt); Schinz, 1833, p. 41;

*Podocnemis dumeriliana* (Schweigger); Duméril & Bibron, 1835, p. 387 (in error);

*Podocnemis unifilis* Troschel, 1848, p. 647. Type locality, 'Rupununi und Takutu', Guyana. Syntypes: Museum für Naturkunde, Berlin (ZMB) 142 (two specimens in alcohol, collected by R. Schomburgk in 1840–44 and photographed and measured by the ZMB for this paper (not physically examined by authors, but existence has been confirmed by Fritz et al., 1994);

*Podocnemis tracaya* Coutinho, 1868, p. 149. Type locality, 'Amazone';

*Chelonemys dumeriliana* (Schweigger); Gray, 1870, p. 83 (in error);

*Podocnemis cayennensis* (Schweigger, 1812); Siebenrock, 1902, p. 162.

3. The name *Testudo terekay* Humboldt, 1819 is a forgotten name, with no known type specimens, never used in modern literature since Gray (1831) and Schinz (1833). It meets the conditions of Article 23.9.1.1 of the Code, while its junior synonym *Podocnemis unifilis* Troschel, 1848, meets the conditions of Article 23.9.1.2 of the Code (see para. 7 below). We therefore declare the name *Testudo terekay* Humboldt, 1819 a nomen oblitum under Article 23.9.2 of the Code whenever it is considered conspecific with *Podocnemis unifilis*.

4. The name *Chelys (Hydraspis) lata* Bell in Gray, 1830, is a forgotten name never used in modern literature, as noted by Rhodin et al. (2008), who declared it informally a nomen oblitum. It meets the criteria of Article 23.9.1.1, and its junior synonym, *Podocnemis unifilis* Troschel, 1848, meets the criteria of Article 23.9.1.2 of

the Code (as shown in para. 7 below), and we therefore declare *Chelys (Hydraspis) lata* a nomen oblitum under Article 23.9.2 whenever it is considered conspecific with *Podocnemis unifilis*.

5. The name *Emys dumeriliana* Schweigger, 1812 was of uncertain usage for a while during the 19th century, being used erroneously at times for the Yellow-headed River Turtle, *Podocnemis unifilis* (e.g. Duméril & Bibron, 1835; Gray, 1870, 1871), but has for all of the 20th century been correctly used for the Big-headed Sideneck Turtle (either as *Podocnemis dumeriliana* or *Peltocephalus dumerilianus*), which was also correctly described by Schweigger (1812), and a neotype (MNHN 8364) for that species was designated by Bour (2006).

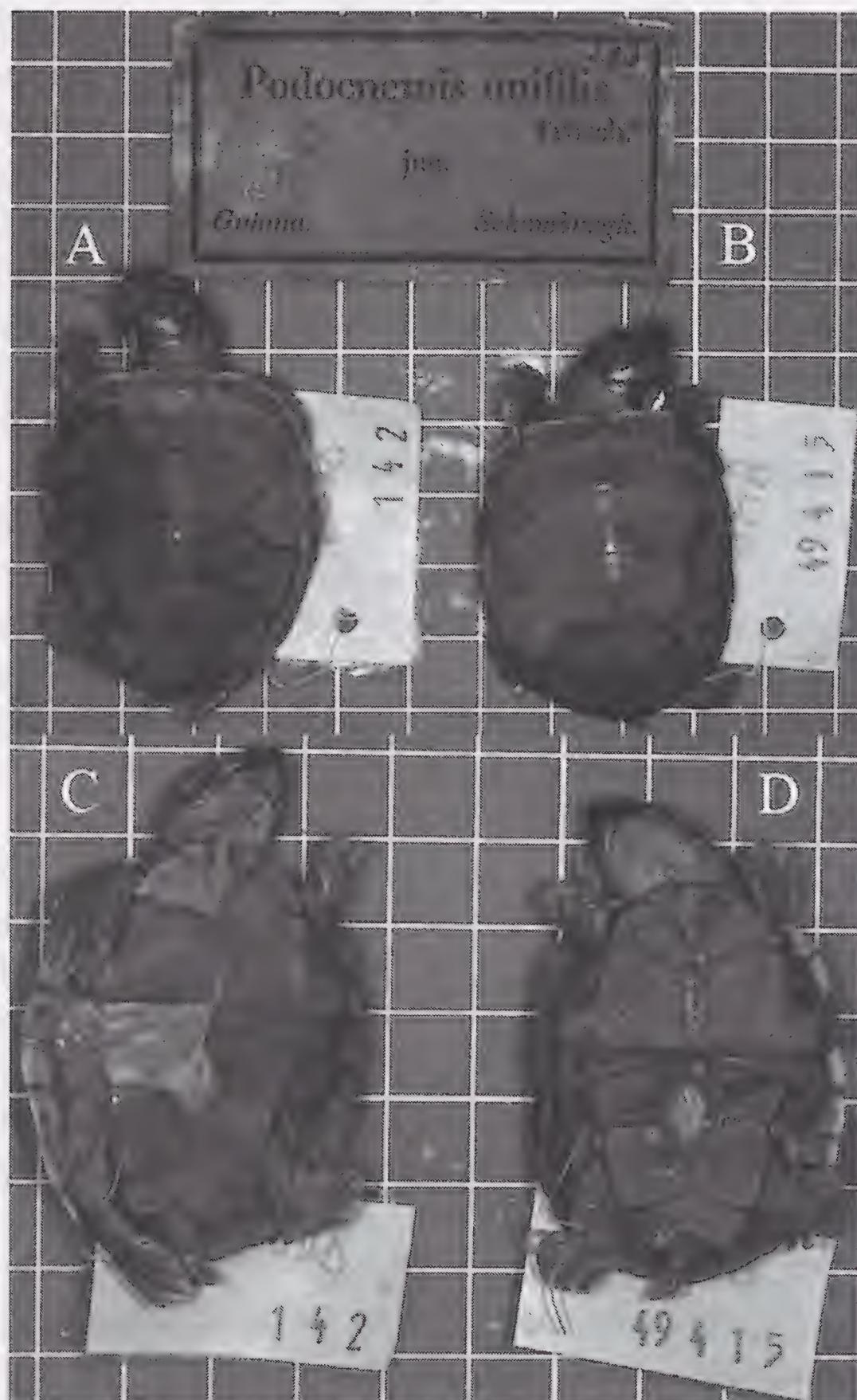
6. During the same period of time the name *Podocnemis unifilis* Troschel, 1848, has been applied in its currently accepted and frequently-used form. The name is based on two specimens (ZMB 142, 49415) collected by R. Schomburgk that were described by Troschel (1848). The latter specimen was renumbered from ZMB 142 for the purposes of this paper, and we hereby designate ZMB 142 (Figs. 1, 2) as the lectotype for *Podocnemis unifilis*, a juvenile specimen (carapace length 46 mm) in the Museum für Naturkunde, Berlin (ZMB).

7. The name *Podocnemis unifilis* has been used for more than 100 years in over 200 publications by numerous authors, and as such, fulfils the requirements of Article 23.9.1.2 of the Code. These include the following 40 examples from ecology and conservation (Fiasson, 1945; Vanzolini, 1977; Foote, 1979; Pritchard & Trebbau, 1984; Almeida & Garcia, 1986; Obst, 1986; Ernst & Barbour, 1989; Souza & Vogt, 1994; Vogt, 2001; Ferreira-Junior & Castro, 2006; Fachin-Terán & Vogt, 2007; Rueda-Almonacid et al., 2007), systematics and morphology (Siebenrock, 1909; Williams, 1954; Wermuth & Mertens, 1961; Medem, 1964; Pritchard, 1967; Mittermeier & Wilson, 1974; Albrecht, 1976; Wermuth & Mertens, 1977; Pritchard, 1979; King & Burke, 1989; Iverson, 1992; Fritz & Havas, 2007; Abdala et al., 2008; Rhodin et al., 2008, 2010; van Dijk et al., 2012; Schneider et al., 2012 [with an extensive bibliography for the species]), genetics (Ayres et al., 1969; Frair et al., 1978; Rhodin et al., 1978; Bock et al., 1998; Fantin et al., 2007) and management (Honegger et al., 1985; Bayley et al., 1992; Baillie & Groombridge, 1996; Hernandez & Espin, 2003; CITES, 2012; IUCN, 2012).

8. The name *Podocnemis cayennensis*, originally *Emys cayennensis* and based on the lectotype MNHN 8359, as designated by Bour (2006), over a similar period was for the most part mistakenly applied to the species now known as the Red-headed Amazon River Turtle, *Podocnemis erythrocephala* (as first noted by Mittermeier & Wilson, 1974). Since this time, the name *cayennensis* has recently been used for the Yellow-headed River Turtle in three systematics papers (Fretey, 1977; David, 1994; Bour 2006), the first of which is an unpublished thesis, and four more popular works (Bonin et al., 1996, 2006; Artner, 2005, 2008).

9. It is the view of the authors that the resurrection and use of the name *P. cayennensis* would be disruptive and confusing within the current literature. The name was erroneously applied for much of its use to *P. erythrocephala*; its junior synonym and preferred name *P. unifilis* has been used in the majority of the literature.

10. The International Commission on Zoological Nomenclature is accordingly asked:  
(1) to use its plenary power to give the name *unifilis* Troschel, 1848, as published in the binomen *Podocnemis unifilis*, precedence over the name *cayennensis*



**Figure 1.** Photographs of the types of *P. unifilis*. A. Dorsal view of the lectotype ZMB 142. B. Dorsal view of the paralectotype ZMB 49415. C. Ventral view of the lectotype ZMB 142. D. Ventral view of the paralectotype ZMB 49415. Also showing the original museum label for the type series.



**Figure 2.** Lateral views of the heads of the types of *P. unifilis*. A. Lectotype ZMB 142. B. Paralectotype ZMB 49415.

Schweigger, 1812, as published in the binomen *Emys cayennensis*, whenever the two are considered to be synonyms;

(2) to place on the Official List of Specific Names in Zoology the following names:

- (a) *unifilis* Troschel, 1848, as published in the binomen *Podocnemis unifilis*, with the endorsement that it is to be given precedence over *cayennensis* Schweigger, 1812, as published in the binomen *Emys cayennensis*, whenever the two are considered to be synonyms;
- (b) *cayennensis* Schweigger, 1812, as published in the binomen *Emys cayennensis*, with the endorsement that it is not to be given priority over the name *unifilis* Troschel, 1848, as published in the binomen *Podocnemis unifilis*, whenever the two are considered to be synonyms.

## Acknowledgements

We thank Mark-Oliver Rödel (*Museum für Naturkunde, Berlin*) for providing access to measuring and photographing the types housed under his care, Roger Bour for providing the original Humboldt reference, and several Commissioners and reviewers who made helpful comments on earlier versions of this manuscript.

## References

**Abdala, V., Manzano, A.S. & Herrel, A.** 2008. The distal forelimb musculature in aquatic and terrestrial turtles: phylogeny or environmental constraints? *Journal of Anatomy*, **213**: 159–172.

**Albrecht, P.W.** 1976. The cranial arteries of turtles and their evolutionary significance. *Journal of Morphology*, **149**: 159–182.

**Almeida, S.S., Sá, P.G.S. & Garcia, A.** 1986. Vegetais consumidos como alimento por *Podocnemis* (Chelonia) na região do baixo rio Xingu (PA). *Boletim do Museu Paraense Emilio Goeldi, Botanica*, **2**(2): 199–211.

**Artner, H.** 2005. Keeping and breeding the yellow-spotted river turtle, *Podocnemis cayennensis* (Schweigger, 1812) over the years. *Emys*, **12**(6): 4–22.

**Artner, H.** 2008. The world's extant turtle species, part 1. *Emys*, **15**(3): 4–32.

**Ayres, M., Sampaio, M.M., Barros, R.M., Dias, L.B. & Cunha, O.R.** 1969. A karyological study of turtles from Brazilian Amazon region. *Cytogenetics*, **8**(6): 401–409.

**Baillie, J. & Groombridge, B.** 1996. *IUCN red list of threatened animals*. IUCN, Gland, Switzerland.

**Bayley, P.B., Vazquez, F., Ghersi, P., Soini, P., & Pinedo, M.** 1992. *Environmental review of the Pacaya-Samiria National Reserve in Peru and assessment of project (527–0341)*: Report prepared for the Nature Conservancy, Iquitos.

**Bock, B.C., Paez, V.P., & Perez, N.F.** 1998. Estudio preliminar con radiotelemetria sobre los desplazamientos de hembras de la tortuga *Podocnemis unifilis* en el Rio Caqueta, Amazonas, Colombia. *Actualidades Biológicas*, **20**(68): 29–36.

**Bonin, F., Devaux, B. & Dupré, A.** 1996. *Toutes les tortues du monde*. 254 pp. Delachaux et Niestl Lausanne, Switzerland.

**Bonin, F., Devaux, B. & Dupré, A.** 2006. *Turtles of the World*. 416 pp. Johns Hopkins Press, Baltimore, Maryland.

**Bour, R.** 2006. Types of Podocnemidae in the Muséum National d'Histoire Naturelle. *Emys*, **13**: 27–40.

**CITES.** 2012. Appendices I, II, and III. [www.cites.org/eng/app/appendices.php](http://www.cites.org/eng/app/appendices.php).

**Coutinho, J.M. Da S.** 1868 Sur les tortues de l'Amazone. *Bulletin de la Société Impériale Zoologique d'Acclimation*, **(2)5**: 147–166.

**David, P.** 1994. List des reptiles actuels du monde. I. Chelonii. *Dumerilia*, **1**: 7–727.

**Duméril, A.M.C. & Bibron, G.** 1835. *Erpétologie générale ou histoire naturelle des reptiles. Tome second.* 630 pp. Roret, Paris.

**Ernst, C.H. & Barbour, R.W.** 1989. *Turtles of the World*. 313 pp. Smithsonian Institution Press, Washington, DC.

**Fachín-Terán, A. & Vogt, R.C.** 2004. Estrutura populacional, tamanho e razão sexual de *Podocnemis unifilis* (Testudines, Podocnemididae) no rio Guaporé (RO), norte do Brasil. *Phylomedusa*, 3(1): 29–42.

**Fantin, C., Carvalho, C.F., Hrbek, T., Sites, J.W. Jr., Monjeló, L.A.d.S., Astolfi-Filho, S. & Farias, I.P.** 2007. Microsatellite DNA markers for *Podocnemis unifilis*, the endangered yellow-spotted Amazon River turtle. *Molecular Ecology Notes*, 7: 1235–1238.

**Ferreira-Junior, P.D. & Castro, P.T.A.** 2006. Thermal environment characteristics of *Podocnemis expansa* and *Podocnemis unifilis* nesting areas on the Javaes River, Tocantins, Brazil. *Chelonian Conservation and Biology*, 5: 102–107.

**Fiasson, R.** 1945. Cinq chéloniens et deux sauriens du Haut-Apure (Venezuela). *Cahiers de l'Institute Français d'Amerique Latine (Mexico, D.F.)*, 3: 33–45.

**Foote, R.W.** 1979. Nesting of *Podocnemis unifilis* (Testudines: Pelomedusidae) in the Colombian Amazon. *Herpetologica*, 34: 333–339.

**Frair, W., Mittermeier, R.A. & Rhodin, A.G.J.** 1978. Blood biochemistry and relations among turtles (Pleurodira, Pelomedusidae). *Comparative Biochemistry and Physiology*, B: *Comparative Biochemistry*, 61(1): 139–143.

**Fretey, J.** 1977. *Les Cheloniens de Guyane Française. 1. Etude préliminaire*. Ph.D. Thesis, University of Paris.

**Fritz, U. & Havas, P.** 2007. Checklist of Chelonians of the World. *Vertebrate Zoology*, 57(2): 149–368.

**Fritz, U., Obst, F.-J., & Günther, R.** 1994. Kritischer Typen-Katalog der Schildkröten-sammlung (Reptilia: Testudines) des Zoologischen Museums Berlin. *Mitteilungen aus dem Zoologischen Museums in Berlin*, 70(1): 157–175.

**Gray, J.E.** 1830. A synopsis of the species of the Class Reptilia. Pp. 1–110 [page numbers duplicated], in Griffith, E. & Pidgeon, E. (Eds.), *The animal kingdom arranged in conformity with its organization, by the Baron Cuvier. Vol. 9: The class Reptilia arranged by the Baron Cuvier, with specific descriptions*. Whittaker, Treacher, & Co., London. [published December 1830, see Rhodin et al. (2010)].

**Gray, J.E.** 1831. *Synopsis Reptilium; or short descriptions of the species of reptiles. Pt. I. Cataphracta, tortoises, crocodiles, and enaliosaurians*. viii, 85 pp., 10 leaves of plates. Treuttel, Wurtz & Co., London.

**Gray, J.E.** 1870. *Supplement to the Catalogue of Shield Reptiles in the Collection of the British Museum. Part I. Testudinata (Tortoises)*. Taylor & Francis, London.

**Gray, J.E.** 1871. Notes on *Podocnemis unifilis*. *Annals and Magazine of Natural History*, (4)8: 68–70.

**Hernandez, O. & Espin, R.** 2003. Consumo ilegal de tortugas por comunidades locales en el Río Orinoco Medio, Venezuela. *Acta Biológica Venezolana*, 23(2–3): 17–26.

**Honegger, R.E., Mittermeier, R.A. & Rhodin, A.G.J.** 1985. *Podocnemis unifilis* Troschel, 1848. Code A-301.009.005.004. Pp. 1–2 In Dollinger, P. (Ed.), *Convention on International Trade in Endangered Species of wild fauna and flora identification manual, vol. 3: Reptilia, Amphibia, Pisces*. Secretariat for the CITES Convention, Lausanne, Switzerland.

**Humboldt, A. de [von].** 1819. *Voyage aux Régions Équinoxiales du Nouveau Continent, fait en 1799, 1800, 1801, 1802, 1803 et 1804, par Al. de Humboldt et A. Bonpland. Tome Second*. 381 pp. N. Maze, Paris.

**IUCN.** 2012. Red List of Threatened Species. <http://www.iucnredlist.org/>.

**Iverson, J.B.** 1992. *A Revised Checklist with Distribution Maps of the Turtles of the World*. 363 pp. Privately printed, Richmond, IN.

**King, F.W. & Burke, R.L.** 1989. *Crocodilian, Tuatara, and Turtle Species of the World. A Taxonomic and Geographic Reference*. 216 pp. Association of Systematics Collections, Washington, DC.

**Medem, F.** 1964. Morphologie, Ökologie und Verbreitung der Schildkröte *Podocnemis unifilis* in Kolumbien. *Senckenbergiana Biologica*, 45(3/5): 353–368.

**Obst, F.J.** 1986. *Turtles, Tortoises and Terrapins*. 231 pp. Edition Leipzig, Leipzig.

**Pritchard, P.C.H.** 1967. *Living Turtles of the World*. 288 pp. TFH Publ., Jersey City.

**Pritchard, P.C.H.** 1979. *Encyclopedia of Turtles*. 895 pp. TFH Publications, Neptune, NJ.

Pritchard, P.C.H. & Trebbau, P. 1984. The Turtles of Venezuela. *SSAR Contributions to Herpetology*, **2**: 1–403.

Rhodin, A.G.J., Mittermeier, R.A., Gardner, A.L., & Medem, F. 1978. Karyotypic analysis of the *Podocnemis* turtles. *Copeia*, **1978**(4): 723–728.

Rhodin, A.G.J., van Dijk, P.P., & Parham, J.F. 2008. Turtles of the world: annotated checklist of taxonomy and synonymy. *Chelonian Research Monographs*, **5**(1): 000.1–38.

Rhodin, A.G.J., van Dijk, P.P., Iverson, J.B. & Shaffer, H.B. 2010. Turtles of the world, 2010 update: annotated checklist of taxonomy, synonymy, distribution, and conservation status. *Chelonian Research Monographs*, **5**(3): 000.85–164.

Rueda-Almonacid, J.V., Carr, J.L., Mittermeier, R.A., Rodríguez-Mahecha, J.V., Mast, R.B., Vogt, R.C., Rhodin, A.G.J., De La Ossa-Velásquez, J., Rueda, J.N., & Mittermeier, C.G. 2007. *Las Tortugas y los Cocodrilianos de los Países Andinos del Trópico*. 538 pp. Editorial Panamericana, Formas e Impresos, Serie de Guías Tropicales de Campo No. 6, Conservación Internacional, Bogotá, Colombia.

Schinz, H.R. 1833. *Naturgeschichte und Abbildungen der Reptilien*. Weidmann'sche Buchhandlung, 120 pp. Leipzig.

Schneider, L., Iverson, J.B. & Vogt, R.C. 2012. *Podocnemis unifilis*. Catalogue of American Amphibians and Reptiles, **890**: 1–33.

Schweigger, A.F. 1812. Prodromus monographiae Cheloniorum. *Königsberger Archiv Naturwissenschaft und Mathematik*, **1**: 271–368, 406–468.

Siebenrock, F. 1902. Zur Systematik der Schildkrötengattung *Podocnemis* Wagler. *Anzeiger der Österreichischen Akademie der Wissenschaften, Mathematisch-Naturwissenschaftliche Klasse*, **1**: 104–106.

Siebenrock, F. 1909. Synopsis der rezenten Schildkröten, mit Berücksichtigung der in historischer Zeit ausgestorbenen Arten. *Zoologische Jahrbücher Supplement*, **10**(3): 427–618.

Souza, R.R. de & Vogt, R.C. 1994. Incubation temperature influences sex and hatchling size in the Neotropical turtle *Podocnemis unifilis*. *Journal of Herpetology*, **28**(4): 453–464.

Spix, J.B. 1824. *Animalia nova sive species novae Testudinum et Ranarum*. 53 pp. Monachii.

Troschel, H. 1848. Amphibien. Pp. 645–661 in Schomburgk, R. (Ed.), *Reisen in Britisch-Guiana in den Jahren 1840–1844. Dritter Theil. Versuch einer Fauna und Flora von Britisch-Guiana*. Verlagsbuchhandlung J.J. Weber, Leipzig.

van Dijk, P.P., Iverson, J.B., Shaffer, H.B., Bour, R. & Rhodin, A.G.J. 2012. Turtles of the world, 2012 update: annotated checklist of taxonomy, synonymy, distribution, and conservation status. *Chelonian Research Monographs*, **5**(5):000.243–328.

Vanzolini, P.E. 1977. A brief biometrical note on the reproductive biology of some South American *Podocnemis* (Testudines, Pelomedusidae). *Papéis Avulsos de Zoologia (São Paulo)*, **31**:79–102.

Vogt, R.C. 2001. Turtles of the Rio Negro. Pp. 245–262 in Chao, L.N., Petry, P., Prang, G., Sonneschien, L. & Tleusty, M. (Eds.), *Conservation and management of ornamental fish resources of the Rio Negro Basin, Amazonia, Brazil (Project Piaba)*. Univ. Amazonas, Manaus, Amazonia, Brazil.

Wermuth, H. & Mertens, R. 1961. *Schildkröten. Krokodile. Brückenechsen*. 422 pp. Gustav Fischer Verlag, Jena.

Wermuth, H. & Mertens, R. 1977. Liste der rezenten Amphibien und Reptilien: Testudines, Crocodylia, Rhynchocephalia. *Tierreich*, **100**:1–174.

Williams, E.E. 1954. A key and description of the living species of the genus *Podocnemis* (sensu Boulenger) (Testudines, Pelomedusidae). *Bulletin of the Museum of Comparative Zoology*, **111**(8): 279–295.

Acknowledgement of receipt of this application was published in BZN **69**: 84.